BHL Cryotank for Long Term Use, Phase I

Completed Technology Project (2011 - 2011)

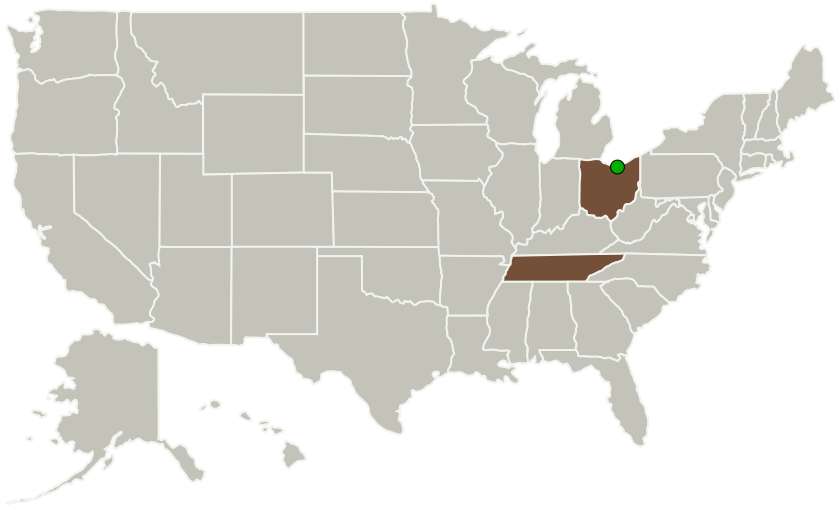
Project Introduction

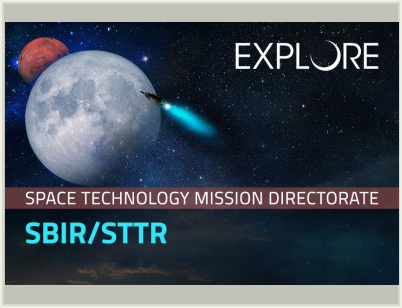
GTL has already made substantial progress in developing and validating the BHL

TM

technology for application to cryotanks. Earlier coupon testing of the temperature-dependent material properties confirmed the potential of the BHL technology to eliminate the microcracking issue. This was followed by the fabrication and cryo-pressure cycle testing of small BHL cylinders. No laminate leaks or degradation were detected in a test with more than 40 cryo-pressure cycles. While other efforts are exploring the reliability aspects of the BHL technology at larger scales, the proposed effort will focus on evaluating the long-term cryogenic propellant storage capabilities of the BHL technology. Specifically, this effort will include initial tests to examine the implications of long-term oxygen exposure on the BHL laminate as the first step towards validating the technology for long-term NASA exploration and other missions. The effort will also refine the BHL laminate design to optimize it for long-term cryogenic propellant storage. This will include an effort to increase the insulating capability of the structural laminate to minimize the need for secondary insulation. A small BHL cylinder shall be fabricated using these refinements as a proof-of-concept.

Primary U.S. Work Locations and Key Partners





BHL Cryotank for Long Term Use, Phase I

Table of Contents

BHL Cryotank for Long Term Use, Phase I

Completed Technology Project (2011 - 2011)

Organizations Performing Work	Role	Type	Location
Gloyer-Taylor Laboratories LLC	Lead Organization	Industry	Tullahoma, Tennessee
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Ohio	Tennessee

Project Transitions

March 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138016)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Gloyer-Taylor Laboratories LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

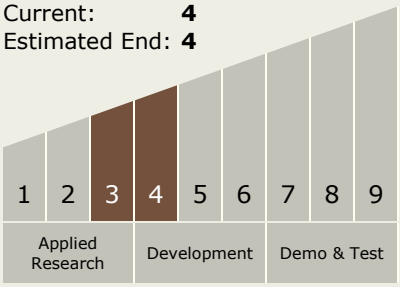
Carlos Torrez

Principal Investigator:

Zachary Taylor

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



BHL Cryotank for Long Term Use, Phase I

Completed Technology Project (2011 - 2011)

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.4 Sustainable Manufacturing

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System